SECTION C - DESCRIPTION/SPECIFICATIONS/WORK STATEMENT

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INTRODUCTION

The Government seeks the development and integration of proven material solutions to improve the survivability, mobility, and operational capability of HMMWV Expanded Capacity Vehicles (HMMWV ECV). The primary mission of the HMMWV ECV is to provide protected mobility to ground forces with the capability of operating in a threat environment that involves the possibility of ambush, the use of mines, explosives, and small arms fire (SAF). The name for this upgraded HMMWV will be the HMMWV Modernized Expanded Capacity Vehicle (HMMWV MECV).

This modernization effort requires the development and integration of protective armor below the cab, enhancements of the vehicle's ability to respond to demands for speed and braking, improvement of the vehicle operator's ability to control the vehicle, and the incorporation of safety enhancements to reduce the intrusion of thermal fires from fuel as well as directed enemy fire in the form of projectiles from entering the crew compartment. Improvement of the armored HMMWV fleet will increase the protection of combat support and combat service support personnel conducting operations against unconventional enemy forces, and will enhance their effectiveness.

The Government's goal is to acquire the HMMWV MECV as a recapitalization effort using the HMMWV ECV as a starting point for redesign and integration. Recapitalization of the HMMWV ECV to produce the HMMWV MECV will reduce development time and offer the added benefit of improving the vehicle system without adding extensive new training requirements and added maintenance support burden on the shoulders of Soldiers in the field.

C.1 SCOPE

The Contractor, as an independent Contractor and not as an agent of the US Government, shall furnish all data, supporting labor, supplies, services, facilities and equipment necessary for the delivery of MECVs, as required under this contract. This Scope of Work covers the Research, Development, Test, and Evaluation Phase (Phase I) of the MECV program.

C.2 VEHICLE REBUILD REQUIREMENTS (PRODUCTION REPRESENTATIVE VEHICLES (PRVs))

C.2.1 Applicable Vehicle Configurations: HMMWV models shall be recapitalized into the MECV configuration. Vehicles to be rebuilt under this contract include the following model:

- M1151A1

C.2.2 Recapitalization Requirements: The Contractor shall modernize the vehicle to MECV configuration as described in the MECV Performance Specification, Attachment 001.

C.3 HARDWARE DELIVERABLES AND TEST SUPPORT

C.3.1 The Contractor shall deliver four PRVs, four B-Kits and one ballistic exploitation cab.

C.3.1.1 One week after award of the contract, the Contractor will be provided physical sets of the Government Furnished Equipment (GFE) components. GFE components shall include five depot RECAP vehicles, four Objective Gunner's Protection Kits (OGPK), one candidate pre-REV B vehicle (serial number under 300000), and one candidate REV B vehicle. The Contractor shall have fully integrated and installed the OGPKs on all PRVs delivered to the test site.

C.3.1.2 The Contractor shall deliver four PRVs for testing not later than 13 weeks after contract award.

C.3.1.3 The Contractor shall deliver one ballistic exploitation cab with B-kit installed not later than 13 weeks after contract award. The cab shall be complete except for insulation, soundproofing, spall liners, seats and seatbelts, dash components, radio racks, Basic Issue Items (BII), Automatic Fire Extinguishing System (AFES), and Heating, Ventilation, Air Conditioning (HVAC), in accordance with the MECV Performance Specification, Attachment 001.

C.3.1.4 B-Kits

C.3.1.4.1 The Contractor shall provide four B-kits. One kit shall be installed on the ballistic exploitation cab, two kits shall be installed on PRVs, and one kit shall be installed by the Contractor during test as stated in C.3.1.4.2.

C.3.1.4.2 The Contractor shall be given 24 hours to install their B-kit on one PRV for testing purposes. The Government will notify the Contractor at least 48 hours in advance of when the B-kit will be required to be installed on the PRV.

C.3.1.5 Basic Issue Items (BII). The BII list shall be designed to support one vehicle and consists of the minimum essential required to place the MECVs in operation, to operate them and to perform emergency repairs. BII are those items identified as essential for an operator or crew to place the MECV into initial operation to accomplish its defined purpose. These items are essential to perform Operator Maintenance repairs which cannot be deferred until completion of an assigned mission. The BII are not listed on the engineering drawings. Although spare and repair parts are not normally included in BII, any items that would be required in the BII based on the vehicles unique design shall be included in the BII. The BII package shall be delivered inside each vehicle. The required list of BII capability is provided in Annex C of Attachment 001.

C.3.2 TEST SUPPORT

C.3.2.1 The Contractor shall provide a MECV test manual with each PRV per CDRL A001, Operator/Operator Maintenance Manual, in Contractor format. Test manual shall include General Information, Equipment Design, Operating Instructions, Preventative Maintenance Checks and Services (PMCS), and Basic Issue Items (BII).

C.3.2.2 The Contractor shall provide maintenance and repair support for the PRVs at Aberdeen Test Center (ATC) to keep the vehicles operational. Government testing is estimated to last approximately 20 weeks.

C.3.2.2.1 The Contractor shall be provided access (as required) to the vehicles at a Government specified location within ATC to conduct maintenance and make repairs. The Government will provide maintenance facilities and material handling equipment (MHE). The Contractor shall provide all necessary tools to support their maintenance activities.

C.3.2.2.2 The Contractor shall provide timely maintenance and repair support to maintain the Government's test schedule. If the Contractor fails to provide timely maintenance and repair support to the PRVs, the Government is not obligated to delay its testing and schedule to accommodate such failure.

C.3.2.2.3 The Contractor shall provide all necessary spare and repair parts required to support Government testing.

C.3.2.3 After delivery of the PRVs, the Contractor shall provide operator training for up to five Government employees at ATC. This training shall be up to eight hours in length and cover the basic operation and maintenance of the PRV.

C.3.2.3.1 Training Material. The Contractor shall provide training aids and devices, both hardware and software, that are unique to the PRV, for up to five Government employees (CDRL A002, Training and Course Materials).

C.3.2.3.2 Government Provided Facilities for Test. The Government will provide classroom facilities and furnishings for the Contractor to conduct PRV training.

C.4 DATA AND SOFTWARE DELIVERABLES

C.4.1 The Contractor shall furnish all information, data and software required under this Scope of Work.

C.4.2 The Contractor shall deliver all data in English.

C.4.3 Electronic Submissions:

C.4.3.1 All electronic data submitted must be in Microsoft (MS) Office Suite and Windows 2000 compatible format unless specified differently in the CDRL.

C.4.3.2 Cover/Transmittal Letter: The Contractor shall annotate the following information in the electronic cover letter for the submission:

Contract Number
CDRL Number and Item (e.g., A001 TRANS RPT)
Delivery Type (Draft, Final)
Date
Contractor Name
System Name

C.4.3.3 All electronic data shall be submitted to PM-LTV. See the Contract Data Requirements List (CDRL) for details.

C.4.3.4 The Contractor shall use the following naming convention for electronic files submitted:

CDRL Number and Item
Delivery Type (Draft, Final)
Date
For example: A001 Trans Rpt Draft 1 Aug 07.doc

C.4.4 The Procuring Contracting Officer (PCO) or Contracting Officer Representative (COR) is the approving authority for all documents delivered under this contract. All guidance will be provided by the PCO or COR.

C.5 MEETINGS/CONFERENCES/REVIEWS

C.5.1 The Contractor and Government shall have meetings and reviews during the performance of the contract. The objectives of these meetings are to review progress and provide guidance on contractual, technical, logistics, or other issues critical to successful contract performance. Meetings where classified information is to be discussed must follow the provision identified in the National Industrial Security Program Operating Manual (NISPOM), Chapter 6. The Contractor shall provide a draft agenda for Government review seven days prior to each meeting (CDRL A003, Draft Meeting Agenda). No discussion, conference, or meeting review interaction shall be construed as providing the Contractor direction to do any work not covered by the contract. The Contractor shall take minutes for all meetings, and submit them to the Government for review and approval. The minutes will identify all action items assigned for both parties to accomplish, along with a completion date for each action item, and all actions requiring Contracting Officer approval. The Contractor shall distribute the Government approved minutes to all parties not later than seven days after the completion of the meeting, IAW CDRL A004, Meeting Minutes. The Contractor shall attend the following meetings, as well as any additional meetings mutually agreed to by both parties:

a) Start of Work Meeting (C.5.1.1)
b) Integrated Product Team Meetings (C.5.1.2)
c) Program Status Reviews (C.5.1.3)
d) Cost and Software Data Reporting (CSDR) Post-Award Conference (C.5.1.4)

C.5.1.1 Start of Work Meeting

C.5.1.1.1 Within fifteen days after contract award, a Start of Work meeting shall be held at a Government-provided facility at or near TACOM in Warren, MI. This meeting will focus on contract terms and conditions, a review of all data requirements, required specifications, program schedule, test requirements and relevant logistics requirements to ensure a complete understanding of the requirements. The meeting shall also include the formation of Government and Contractor integrated product teams (IPT). The Start of Work objective is to review the Government requirements, program obligations, objectives, and responsibilities, and to conduct an overall review of the projected Contractor approach, general assumptions, schedule, anticipated level of effort, and any other areas needing clarification.

C.5.1.1.2 The Contractor shall make available contract administration personnel, management, engineers, logistic support, and other personnel involved with the MECV program. Corporate participation may include appropriate major and critical subcontractor representatives, at the discretion of the Contractor. Representatives from the following corporate and Government management functions shall participate in the Start-of-Work meeting: program office, customer (operational user), technical, and functional management, PCO, Administrative Contracting Officer (ACO), financial, and other personnel with an assigned management responsibility for the MECV. The PCO and Contractor lead will finalize the attendance list prior to the start of work meeting.

C.5.1.1.3 At the Start of work meeting, the Contractor shall present detailed paths and milestone graphic presentations that detail the performance necessary to meet contract requirements as defined in the Scope of Work. The Contractor shall provide to the Government an internal list of key functional Contractor personnel involved in this contract in contractor format in conjunction with the draft meeting agenda (CDRL A003, Draft Meeting Agenda). This list will be updated as changes occur to maintain accuracy. The Contractor shall coordinate the agenda with the Government prior to the meeting (CDRL A003, Draft Meeting Agenda).

C.5.1.2 Integrated Product Teams (IPT) and IPT Meetings

C.5.1.2.1 IPTs shall be used in the manufacture, test, refurbishment, and management phases of this program. These IPTs shall include Government, Contractor, and Subcontractor participation. The IPT will be used as a forum for program reviews, design reviews, resolution of issues, and other contract-related items. IPT meetings may be held at the Contractor’s or Government’s facilities, as mutually agreed upon.

C.5.1.2.2 Conference calls or video conferences may suffice for IPT meetings, when appropriate. The Government and Contractor will jointly schedule the meetings and establish the agenda at least seven working days before the IPT start to allow for travel time.

C.5.1.3 Program Status Reviews. The Contractor shall provide technical and managerial representative(s) to review contract status in conjunction with integrated product team meetings. Topics to be discussed shall include contract status, testing and build, technical issues, and deliverables. The Contractor shall provide an agenda to the Government no later than seven days prior to the meeting. Additional conferences may be called by either the Government or the Contractor as necessary to clarify any questions regarding contract requirements.

C.5.1.4 Contract Software Data Reporting (CSDR) Post Award Conference. Within 60 days following contract award, a post award conference will be held at a Government-provided facility at or near TACOM in Warren, MI. The topics shall include the Contractor's standard CSDR process that satisfies the guidelines contained in the DoD 5000.04-M-1, CSDR Manual, and the requirements in the Government-approved CSDR plan for the contract, DD Form 2794.

C.5.1.5 The Government reserves the right to call any other meetings required for successful execution of the MECV contract at mutually agreeable locations. If the Government determines another meeting is required, the Government will provide the Contractor with ten days notice.

C.6 ENVIRONMENTAL, SAFETY & OCCUPATIONAL HEALTH (ESOH)

C.6.1 Safety Engineering and Health Hazards

C.6.1.1 The Contractor shall implement a System Safety Management Plan and Health Program Plan that is integrated with the system engineering process used to develop, mature and support the system. The Contractor shall use MIL-STD-882D as a guide and as tailored by AR 385-10 and AR 40-10, in determining whether System Safety and Health engineering objectives are met.

C.6.1.2 The Contractor shall follow good safety engineering practices and identify safety and health hazards associated with the system by conducting safety/health analyses and hazard evaluations of operational and maintenance aspects (CDRL A005, Safety Assessment Report). The analyses shall include potential health hazards such as heat and cold stress, noise, inadequate ventilation, exhaust, vibration, NBC protection, toxic substances and ionizing and non-ionizing radiation. The Contractor shall provide sufficient detail to clearly define the specific problem, issues involved, and reasoning behind the analysis. The Contractor assessment shall include an analysis of data, observations, findings, reports and other sources of information. The Contractor shall adhere to software process requirements.

C.6.1.3 The Contractor shall eliminate or reduce hazards to acceptable levels by elimination or control through appropriate design or materiel selection. The Contractor shall use the following in descending order of precedence to eliminate or control potential safety/health hazards:

a. Design for minimum risk – Unacceptable hazards or conditions shall be eliminated or their associated risks mitigated by design when feasible. Examples of hazards to be considered include: high temperature, chemical burns, electrical shock, cutting edges, sharp points, or concentrations of toxic fumes above established threshold limit values. Protective devices shall not impair operational functions and equipment components and controls shall be located so that access to them by personnel during operation, maintenance or adjustments shall not require exposure to hazards.

b. Incorporate Safety Devices - Hazards or unacceptable conditions that cannot be eliminated or controlled through design selection shall be controlled to an acceptable level of risk through the use of fixed, automatic or other protective safety design features or devices.

c. Provide Warning Devices - Devices will be installed to detect hazardous or unacceptable environmental conditions that cannot be otherwise eliminated or controlled. Adequate warnings shall be provided to alert personnel of the hazard or unacceptable condition and afford sufficient time for personnel response.

d. Develop Procedures and Training – When all other reasonable possibilities of hazard resolution or protection have been exhausted, procedural controls and specialized training may be used to counter hazardous or unacceptable environmental conditions and actions. Warning and inspection provisions and procedures will be used to detect and correct failures, malfunctions and errors before the hazard damage manifests itself.

C.6.2 Safety Assessment Report (SAR); CDRL A005

C.6.2.1 The Contractor shall prepare and submit to the Government an initial Safety Assessment Report (SAR) for the system as a result of system safety analyses, hazard evaluations, and any contractor independent testing. The safety assessment shall identify all hazards associated with the system hardware and software design, the specific design features employed to eliminate or control the hazard; and shall provide verification of compliance to safety requirements. The assessment shall also establish special procedures and/or precautions to be observed by our test agencies and system users. The Contractor shall prepare the SAR in accordance with DI-SAFT-80102B.

C.6.2.2 As an addendum of the SAR the Contractor shall identify health hazards associated with the system. In preparing the health hazard portion of the SAR, the Contractor shall provide a description and discussion of each potential or actual health hazard issue of concern for each subsystem or component relative to the Health Hazard Assessment requirements of AR 40-10. A health hazard is an existing or likely condition, inherent to the operation, maintenance, transport or use of materiel that can

cause death, injury, acute or chronic illness, disability, or reduced job performance of personnel by exposure to physiological stresses.

C.6.2.3 Each hazard, whether safety or health shall include the classification of hazard severity and probability of occurrence. The Contractor shall include when the hazards may be expected to occur, whether under normal, unusual operating or maintenance conditions. Include in the SAR copies of Material Safety Data Sheets (MSDS) for all hazardous materials incorporated into the system. In the event the system is modified or procedural changes made after the final SAR is submitted, the Contractor shall update the SAR to reflect those modifications or changes. The final SAR is subject to TACOM LCMC approval.

C.6.2.4 Examples of hazards to be included in the report are fire prevention issues, ergonomic hazards; sharp edges/moving parts, physical hazards (heat or cold stress, acoustical energy, vibration, etc.), chemical hazards (flammables, corrosives, carcinogens, etc.), toxic fumes (exhaust emission hazards), ionizing and non-ionizing radiation, electrical issues and noise. Identified hazards shall have recommended engineering controls, equipment, and/or protective procedures to reduce the associated risk.

C.6.3 Human System Integration/Manpower and Personnel Integration (MANPRINT). MANPRINT is a comprehensive management and technical program that focuses attention on human capabilities and limitations throughout a system's life cycle. MANPRINT's goal is to optimize total system performance at acceptable cost and within human constraints.

IAW Enclosure 8 of DoDI 5000.02 (02 Dec 08), human systems integration practices and procedures shall be an integrated part of the MECV program's system engineering process which shall include, Manpower, Personnel, Training, Human Factors Engineering, System Safety, Health Hazards and Soldier's Survivability to ensure the human (i.e., the crew) is included as a core system component in the design and development of MECV's overall total system solution. The Contractor shall directly support the MANPRINT compliance and the coordination of MANPRINT issue adjudication in accordance with AR 602-2. Compliance shall include addressing all seven MANPRINT domains. The Contractor shall utilize AR 602-2 and MIL STD 1472F as guides for implementing MANPRINT into the MECV program.

C.6.3.1 Manpower, Personnel and Training (MPT). The Contractor shall ensure that servicemen-related manpower and training costs are minimized, while retraining maximum mission effectiveness through integrated systems design and the optimum use of MPT resources. All designs and modifications shall be analyzed to ensure maximum use of available MPT resources within the appointed unit.

C.7 BASIC SUPPORTABLITY

C.7.1 Manpower and Personnel. The Contractor shall maintain the manpower requirements for operation and maintenance within the current level identified for the

HMMWV FOV (Wheeled Vehicle Mechanic (91B)). The MECV shall not require any new Military Occupational Specialty (MOS).

C.8 RELIABILITY, AVAILABILITY, MAINTAINABILITY (RAM) PROGRAM

C.8.1 General. The Contractor shall maintain a RAM program to ensure the MECV meets the RAM standards set forth in the performance specification. The design shall be monitored throughout the entire period of performance to identify and assess any changes which would impact RAM. The Contractor shall develop reliability analyses and predictions as required to ensure compliance with the performance specification. The program shall encompass all aspects of reliability with respect to design selection of components, predictions, and testing. If it is determined that an item is a throwaway, an analysis shall be performed at the next higher indenture level. The Contractor shall maintain and make available to the Government all RAM data on any Contractor or Subcontractor supplied item and shall inform the Government of any part or component which will degrade system RAM requirements. The RAM program shall minimally include the tasks outlined in C.8.1.1 – C.8.1.2. Offerors are advised that battle damage assessments, parts shortages and other readiness issues are For Official Use Only (FOUO) or classified and must be properly marked and handled.

C.8.1.1 Procedures and Controls. The Contractor shall maintain procedures and controls which ensure products obtained from suppliers, vendors and Subcontractors meet reliability requirements. The Contractor shall: (a) establish, implement, and maintain documented procedures which detect and preclude the use of substandard or counterfeit parts in the production process, and impose similar requirements on Subcontractors; and (b) provide the Government with reasonable notice of any special RAM program review meetings scheduled with Subcontractors so Government representatives may attend at their discretion.

C.8.1.2 Reliability Predictions. The Contractor shall provide detailed design reliability predictions based on a defined configuration and associated models. The predictions shall be allocated down to the lowest indenture level of the Indentured Bill of Material (IBOM) and updated each time significant design or mission profile changes significantly impact the MECV or any of its subsystems. The reliability modeling method shall mathematically relate the reliability block diagrams of the MECV to time-event relationships. These tasks shall be performed in consideration of the end-user operational environment including sun load thermal, shock and vibration effects. Reports shall be submitted IAW CDRL A006, Reliability Predictions and Documentation of Supporting Data.

C.8.1.2.1 The Contractor shall provide a recommendation on the lowest indenture level to be assessed with rationale for Government review and an explanation of what is significant about the design (CDRL A006, Reliability Predictions and Documentation of Supporting Data). The mission equipment Government Furnished Equipment (GFE) will impact the reliability prediction but will not be negatively assessed against the Contractor.

C.9 EQUIPMENT INTEGRATION AND INSTALLATION

C.9.1 The Contractor shall integrate all mission equipment to include GFE, Contractor Furnished Equipment (CFE) and Contractor Developed Equipment (CDE). Integration shall include providing space, power, weight allocation, heat load, cabling, cableways, all through hull connections, all other hardware and software interfaces and CFE mission equipment necessary to meet the requirements as stated in the MECV Performance Specification (Attachment 001).

C.10 CONTRACTOR COST SOFTWARE DATA REPORTING (CSDR), CDRLs A009, A010, and A011

C.10.1 The contractor shall systematically collect and report actual contract costs to provide DoD cost analysts with needed data to estimate future costs. Contractor reports shall be prepared in accordance with the instructions contained in the most recently approved versions of DI-FNCL-81565 and DI-MGMT-81334D as of the date of contract award.

C.10.2 IAW DoDI 5000.02 and DFARS 252.234-7003, Notice of Cost and Software Reporting System, this SOW includes the Government-approved Contract CSDR plan for the contract, (Attachment 005, MECV Contract Software Data Reporting Contract Plan (DD Form 2794)).

C.10.3 The Contractor shall:

(a) Describe the process to be used to satisfy the requirements of the DoD 5000.04-M-1, CSDR Manual, and the Government-approved CSDR plan (Attachment 005, MECV Contract Software Data Reporting Contract Plan (DD Form 2794)) for the proposed contract (CDRL A007, Cost Data Summary Report);

(b) Demonstrate how contractor cost and data reporting (CCDR) will be based, to the maximum extent possible, upon actual cost transactions and not cost allocations;

(c) Demonstrate how the data from its accounting system will be mapped into the standard reporting categories required in the CCDR data item descriptions;

(d) Describe how recurring and nonrecurring costs will be segregated (CDRL A007, Cost Data Summary Report);

(e) Accept or propose changes to the Government-approved Contract CSDR plan (Attachment 005, MECV Contract Software Data Reporting Contract Plan (DD Form DD2794));

(1) The Contract CSDR plan shall include level 3 of the contract Work Breakdown Structure (WBS) and any lower level WBS elements designated by the

Government as being high risk, high value, or high technical interest (CDRL A007, Cost Data Summary Report and CDRL A008, Contract Work Breakdown Structure and Dictionary).

(2) The Contract CSDR plan shall also include a weight breakdown to the third level of your system's WBS. Describe how these weights were obtained (i.e., analysis, vendor data, actual weighing).

(3) The Contractor may further extend the WBS for its own reporting or management purposes.

(4) if proposed changes are accepted, a revised Government-approved CSDR plan will be incorporated into the contract;

(f) Submit the DD Form 1921, Cost Data Summary Report per CDRL A007 30 days following delivery of test articles.

(g) Submit a detailed Bill of Material (BOM) per CDRL A009, Bill of Material, 30 days following delivery of test articles.

(h) Have a documented standard CSDR process that satisfies the guidelines contained in the DoD 5000.04–M–1, CSDR Manual;

(i) Have management procedures that provide for generation of timely and reliable information for the CCDRs required by the CCDR data items of this contract;

(j) Use the Government-approved CSDR plan for this contract, (Attachment 005, MECV Contract Software Data Reporting Contract Plan (DD Form 2794)) as the basis for reporting in accordance with the required CSDR data item descriptions (DIDs).

C.11 VEHICLE MODELING DATA

C.11.1 The Contractor shall submit Attachment 006, MECV Vehicle Cone Index (VCI) Data Sheets, for the Armaments Carrier, Shelter Carrier, Command and Control, and TOW Carrier Variant per CDRL A010, 60 days after delivery of the test articles.

C.11.2 The Contractor shall submit Attachment 007, MECV North Atlantic Treaty Organization (NATO) Reference Mobility Model (NRMM) Data Sheets, for the Armaments Carrier, Shelter Carrier, Command and Control, and TOW Carrier Variant per CDRL A011, 60 days after delivery of test articles.

C.11.3 The Contractor shall submit Attachment 008, MECV Vehicle Dynamic Data Sheets, for the Armaments Carrier, Shelter Carrier, Command and Control Variant, and TOW Carrier Variant per CDRL A012, 60 days after delivery of test articles.